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09/641,815	08/18/2000	Joseph M. DeSimone	5051-441	7597

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EXAMINER

NORTON, NADINE GEORGIANNA

ART UNIT PAPER NUMBER

1764

DATE MAILED: 03/13/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/641,815

Applicant(s)

DESIMONE ET AL.

Examiner

Nadine Norton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 25 December 2002.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11-13, 18-46 and 49-64 is/are pending in the application.
- 4a) Of the above claim(s) 21-46 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-13, 18-20 and 49-64 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Withdrawal of Claim Rejections Under 35 USC § 112*

Applicants' amendments submitted 9-16-02 in paper no.14 are sufficient to overcome the previous 112 rejections.

### *Withdrawal of Claim Rejections Under 35 USC § 103*

Applicants' statement of common ownership is sufficient to overcome the previous 103 rejection via 102(e) over DeSimone et al.(6,211,422).

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 4-9, 11-13, 18-20, 50, 51, and 53-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bitler et al.(6,255,367) in view of "Supercritical Fluids in Heterogeneous Catalysis" by Baiker.

Applicants are claiming a method for carrying out a reaction in carbon dioxide. The claimed process involves contacting a fluid mixture with a catalyst bound to a polymer in order to form a reaction product.

The reference of Bitler et al.(6,255,367) discloses a composition suitable for accomplishing hydrogenation. See column 13, lines 57-60. The reference teaches that the composition contains a polymer and a catalytically active ingredient. Suitable polymers include fluorinated polymers derived from acrylates or methacrylates (fluoracrylates) and styrene. See column 10, lines 5-10 & 51-56 and column 11, lines 66-67. Bitler et al.(6,255,367) teaches that the invention can make use of "any" modifying agent in which a catalytically active ingredient is bonded or associated with a temperature sensitive polymeric ingredient. See column 13, lines 23-29. The reference teaches that chemically active ingredients and modifying agents include enzymes, rhodium and vanadium. The reference also teaches that such ingredients are attached by ligands. See column 13, lines 1-10. The reference also discloses the presence of a phosphate. See column 19, line 55.

The reference of Bitler et al.(6,255,367) discloses a composition with components corresponding to those defined in applicants claims which can be used for hydrogenation.

A difference is noted between the teachings of Bitler et al.(6,255,367) and applicants' claimed invention. The reference is silent about employing the disclosed compositions in the presence of carbon dioxide.

The reference of Baiker is cited to illustrate that it is known that accomplishing a hydrogenation reaction in the presence of supercritical carbon dioxide will desirably increase the solubility of hydrogen. See page 466, lines 18-63. Note: The disclosure of supercritical carbon

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dioxide is considered to encompass gaseous carbon dioxide because supercritical carbon dioxide is a "gas" at a temperature exceeding the critical temperature and pressure.

Since the reference of Bitler et al.(6,255,367) does not limit the hydrogenation conditions used in conjunction with the disclosed composition, it would have been obvious to one of ordinary skill in the art at the time the invention was made to desiring to accomplish a hydrogenation reaction to employ supercritical carbon dioxide because the reference of Baiker illustrates that it is known that supercritical carbon dioxide functions to desirably increase the solubility of the hydrogen. Motivation to employ supercritical carbon dioxide during hydrogenation is the desire for greater hydrogen solubility. Applicants have not shown anything unexpected by modifying the reference of Bitler et al.(6,255,367) with the known use of carbon dioxide to improve hydrogenation reactions.

In addition, it would have been obvious to one of ordinary skill in the art at the time the modified process of Bitler et al.(6,255,367) would encompass polymers with similar carbon dioxide solubility characteristics because the modified process provides for applicants' specifically claimed polymers under carbon dioxide conditions. The same polymers subjected to similar carbon dioxide conditions would naturally display similar carbon dioxide solubility characteristics.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7, 20, 50, 51, 52, 53, 54, 55, 56, and 64 are rejected under 35 U.S.C. 102(b) as being anticipated by Tacke et al.(5,734,070).

Applicants are claiming a method for carrying out a reaction in carbon dioxide. The claimed process involves contacting a fluid mixture with a catalyst bound to a polymer in order to form a reaction product.

The reference of Tacke et al.(5,734,070) discloses a hydrogenation process involving the use of a polymer supported Pd, Rh, Pt, or Ru catalyst. See column 5, lines 23-31 and column 6, lines 45-55. Suitable polymers include organosiloxanes. See column 6, lines 50-55. The process is accomplished in the presence of supercritical carbon dioxide. See column 5, lines 16-22.

The reference of Tacke et al.(5,734,070) discloses a hydrogenation process involving the use of a composition with components corresponding to those claimed by applicants in the presence of carbon dioxide. Note: The disclosure of supercritical carbon dioxide is considered to encompass gaseous carbon dioxide because supercritical carbon dioxide is a "gas" at a temperature exceeding the critical temperature and pressure. In addition, the disclosed polymer composition would inherently have the same solubility characteristics as that claimed by applicants' because the same composition subjected to the same conditions (e.g. the presence of carbon dioxide) displays the same physical characteristics.

Applicants' process is anticipated by the reference of Tacke et al.(5,734,070) because it discloses essentially the same process steps/compositions claimed by applicants.

Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### *Response to Arguments*

Applicants' arguments filed 9-16-02 in paper no. 14 have been fully considered but they are not persuasive.

Applicants' arguments against the combination of references are not sufficient to overcome the rejection above. In response, it is maintained that motivation to combine the references is derived from the following statement previously contained in the rejection above. "Motivation to employ supercritical carbon dioxide during hydrogenation is the desire for greater hydrogen solubility. Applicants have not shown anything unexpected by modifying the reference of Bitler et al.(6,255,367) with the known use of carbon dioxide to improve hydrogenation reactions". Applicants' arguments did not address the previous motivation statement contained in the rejection above.

In addition, applicants argue that the applied references do not disclose all of applicants' claimed limitations because they do not disclose the specific polymer solubility characteristics defined in applicants' claims. In response, it is maintained that the disclosed polymers would have similar solubility characteristics under like conditions because the references disclose polymer compositions with the same final composition as those claimed by claimed by applicants. The same composition would display similar characteristics (e.g. solubility) under

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like conditions such as the presence of carbon dioxide. The claiming of a silent characteristic contained in the prior art is not patentably distinguishing. In addition, one set of applicants' claims define the polymer as soluble in carbon dioxide while the other set of claims define the polymer as insoluble in carbon dioxide. Each of the rejections above should encompass at least one set of applicants' claims above because the disclosed polymer compositions must be either soluble or insoluble in carbon dioxide.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nadine Norton whose telephone number is 703-305-2667. The examiner can normally be reached on Monday through Thursday from 8:30 am to 7:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 703-308-6824. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0661.

N.N.

March 6, 2003

NADINE G. NORTON  
PRIMARY EXAMINER

